

HISTORIC PROPERTY INVENTORY FORM

IDENTIFICATION SECTION

Field Site No. 163-N      OAHP No.      Date Recorded 12-Feb-95

Site Name Historic Demineralizer Plant

Common

Field Recorder Philip M. Bogen, Evaluator: Darby Stapp

Owner's Name U.S. Department of Energy, Richland Operations Office

Address P.O. Box 550

City/State/Zip Code Richland, WA 99352

Status

☒ Survey/Inventory

☐ National Register

☐ State Register

☐ Determined Eligible

☐ Determined Not Eligible

☐ Other (HABS, HAER, NHL)

☐ Local Designation

Photography

Photography Neg. No. Roll 11, Frame 4

View of South Side

Date 1994

Classification

District Status ☒ NR

Contributing ☒

District/Thematic Nomination Name Hanford Site Manhattan Project and Cold War Era Historic District

Description Section

Materials & Features/Structural Types

Building Type Industrial

Plan L-Shaped

Structural System Metal Frame

No. of Stories 1

Roof Type

☐ Gable

☒ Flat

☐ Monitor

☐ Gambrel

☐ Shed

☐ Hip

☐ Pyramidal

☐ Other (specify)

Cladding (exterior Wall Surfaces)

☐ Log

☐ Horizontal Wood Siding

☐ Rustic/Drop

☐ Clapboard

☐ Wood Shingle

☐ Board and Batten

☐ Vertical Board

☐ Asbestos/Asphalt

☐ Brick

☐ Stone

☐ Stucco

☐ Terra Cotta

☐ Concrete/Concrete Block

☐ Vinyl/Aluminum Siding

☒ Metal (specify) Corrugated

☐ Other (specify)

Roof Material

☐ Wood Shingle

☐ Wood Shake

☐ Composition

☐ Slate

☐ Tar/Built-up

☐ Tile

☒ Metal (specify) Corrugated

☐ Other (specify)

☐ Not visible

Foundation

☐ Log

☐ Post & Pier

☐ Stone

☐ Brick

☐ Not visible

Concrete

☐ Block

☒ Poured

☐ Other (specify)

Integrity

(Include detailed description in Description of Physical Appearance)

Intact

Slight

Moderate

Extensive

Changes to plan

Changes to windows

Changes to original cladding

Changes to interior

Other (specify)

State of Washington, Department of Community Development  
Office of Archaeology and Historic Preservation  
111 21st Avenue Southwest, Post Office Box 48343  
Olympia, Washington 98504-8343 (206)753-4011

LOCATION SECTION

Address 100-N Reactor Area, Building 163-N

City/Town/County/Zip Code Richland, WA/Benton County/99352

Twp. 14N Range 26E

Section 28 1/4 Section NW 1/4 1/4 Sec SE

Tax No./Parcel No.

Quadrangle or map name Coyote Rapids 7.5 min. series

UTM References Zone

Plat/Block/Lot

Supplemental Map(s) 100-N Area Buildings



High Styles/Forms (Check one or more of the following)

☐ Greek Revival

☐ Gothic Revival

☐ Italianate

☐ Second Empire

☐ Romanesque Revival

☐ Stick Style

☐ Queen Anne

☐ Shingle Style

☐ Colonial Revival

☐ Beaux Arts/Neoclassical

☐ Chicago/Commercial Style

☐ American Foursquare

☐ Mission Revival

☐ Spanish Colonial Revival/Mediterranean

☐ Tudor Revival

☐ Craftsman/Arts & Crafts

☐ Bungalow

☐ Prairie Style

☐ Art Deco/Art Moderne

☐ Rustic Style

☐ International Style

☐ Northwest Style

☐ Commercial Vernacular

☐ Residential Vernacular (see below)

☒ Other (specify) Industrial Vernacular

Vernacular House Types

☐ Gable Front

☐ Gable Front and Wing

☐ Side Gable

☐ Cross Gable

☐ Pyramidal/Hipped

☐ Other (specify)

NARRATIVE SECTION

Study Unit Themes (check one or more of the following)

- ☐ Agriculture
- ☐ Architecture/Landscape Architecture
- ☐ Arts
- ☐ Commerce
- ☐ Communications
- ☐ Community Planning/Development

- ☐ Conservation
- ☐ Education
- ☐ Entertainment/Recreation
- ☐ Ethnic Heritage (specify)
- ☐ Health/Medicine
- ☐ Manufacturing/Industry
- ☐ Military

- ☐ Politics/Government/Law
- ☐ Religion
- ☐ Science & Engineering
- ☐ Social Movements/Organizations
- ☐ Transportation
- ☒ Other (specify) Manhattan Project & Cold War Era
- ☒ Study Unit Sub-Theme(s) (specify)
  - Cold War/Nuclear Fuel Production
  - Reactor Operations, Water Treatment

Statement of Significance

Date of Construction	1964	Architect/Engineer/Builder	General Electric/Burns and Roe
<input checked="" type="checkbox"/>	In the opinion of the surveyor, this property appears to meet the criteria of the National Register of Historic Places.		
<input checked="" type="checkbox"/>	In the opinion of the surveyor, this property is located in a potential historic district (National and/or local).		

The 163-N Building produced high-quality, demineralized makeup water from filtered river water for the major cooling systems of the N Reactor. Demineralized water, which has virtually all dissolved and suspended matter removed by ion exchange, was used to prevent mineral deposits that would foul piping systems. Use of demineralized water also limited the generation of radioactive waste through neutron activation of dissolved and suspended matter. The demineralization process was an essential part of the light water pressurized recirculating cooling system employed at N Reactor, which is considered a major advancement in Hanford Reactor technology, with significant beneficial impacts to the environment.

Water was supplied to the 163-N Building from the 183-N Filtration Plant. The original demineralization facility consisted of the following equipment: Four two-compartment primary cation and anion units, one water heater, one vacuum deaerator with air ejectors, four booster pumps, four two-compartment secondary cation and anion units, four regenerating units, one acid storage tank and pumps, and one caustic storage tank and pumps. In 1988, a spent regenerant surge tank and elementary neutralization units were added to reduce environmental impacts; these never operated because N Reactor never restarted. The demineralization process was a key part of the recirculating cooling water design and represents a major advancement in Hanford reactor design that had implications for both environmental safety and steam generation for electricity generation.

This property is not associated with an important person (Criterion B), does not possess any distinctive architectural features or methods of construction (Criterion C), and does not qualify under Criterion D as the principal source of important information. However, the 163-N Building qualifies under Criterion A due to its association with the Cold War production of plutonium at N Reactor, and its contribution to Reactor Operations, specifically the Water System. Therefore, it is the conclusion of the U.S. Department of Energy that the 163-N Building is eligible under Criterion A for inclusion on the National Register of Historic Places as a contributing property within the Hanford Site Manhattan Project and Cold War Era Historic District.

Description of Physical Appearance

The 163-N Building is a L-shaped, one-story, high-bay, metal frame building with a poured concrete foundation and corrugated metal exterior siding and flat roof. The 163-N Building measures a maximum of 167 ft by 108 ft (51 m by 33 m); 18,036 ft² (1,683 m²). No significant changes have been made to the building.

The N Reactor UTM coordinates are as follows: Northeast corner - 303974E, 5172485N; southeast corner - 303974E, 5171639N; southwest corner - 303069E, 5171639N; northwest corner - 303069E, 5172485N.

Major Bibliographic References

Bechtel Hanford, Inc. 1994. "Pre-Existing" Conditions Survey of Hanford Site Facilities to be Managed by Bechtel Hanford, Inc. Hanford, ID: Bechtel Hanford, Inc.

Rollie Warner, Engineer, Columbia Energy & Environmental Services, Inc.

Architectural Floor & Roof Plans, Drawing No. H-1-31150, 1980.